



The Co-design of Eco- and Culturally-sensitive Housing for the Pinoleville Pomo Nation

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Introduction

The Pinoleville Pomo Nation (PPN) has strong values about environmental harmony, and has for some time contemplated ways to make their lands and homes more sustainable. The PPN, however, did not have a plan to proceed and began to seek partnerships with universities.

This project focuses on the development of culturally inspired homes that incorporate renewable energy and sustainability best practices. The design created shows promising potential to achieve substantial energy and water savings while maintaining the unique cultural aspects of the Pinoleville Pomo Nation.

Motivation

The PPN is facing several critical challenges:

- ~300 members scattered throughout N. CA
- Many are seeking to return to the lands of the PPN
- Rising heating and cooling costs
- Drought conditions
- HUD-financed housing provides basic necessities
- No representation of the cultural and traditional values of the PPN in HUD housing

Roundhouse Style Design

The design was created after four iterative design sessions with the PPN. Similar to a yurt, the house features a large decagon with five hexagon shaped attachments, skylight, and a dome shaped roof. The five hexagon attachments can be used for bedrooms or additional storage. The skylight provides natural lighting and heating. The kitchen area and the front door will face east. The green roofs provide space for native Pomo plants such as the Angelica root and solar hot water heaters or PV systems.

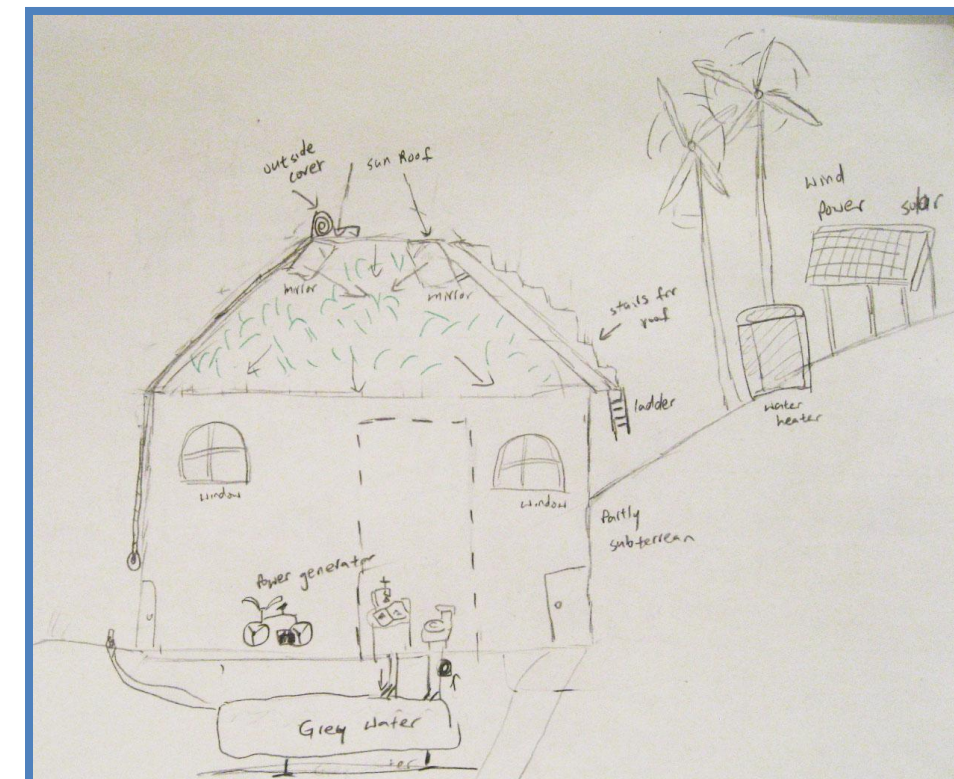


Fig. 1: Conceptual Home Design with Grey Water, Wind, and Solar Power Generation

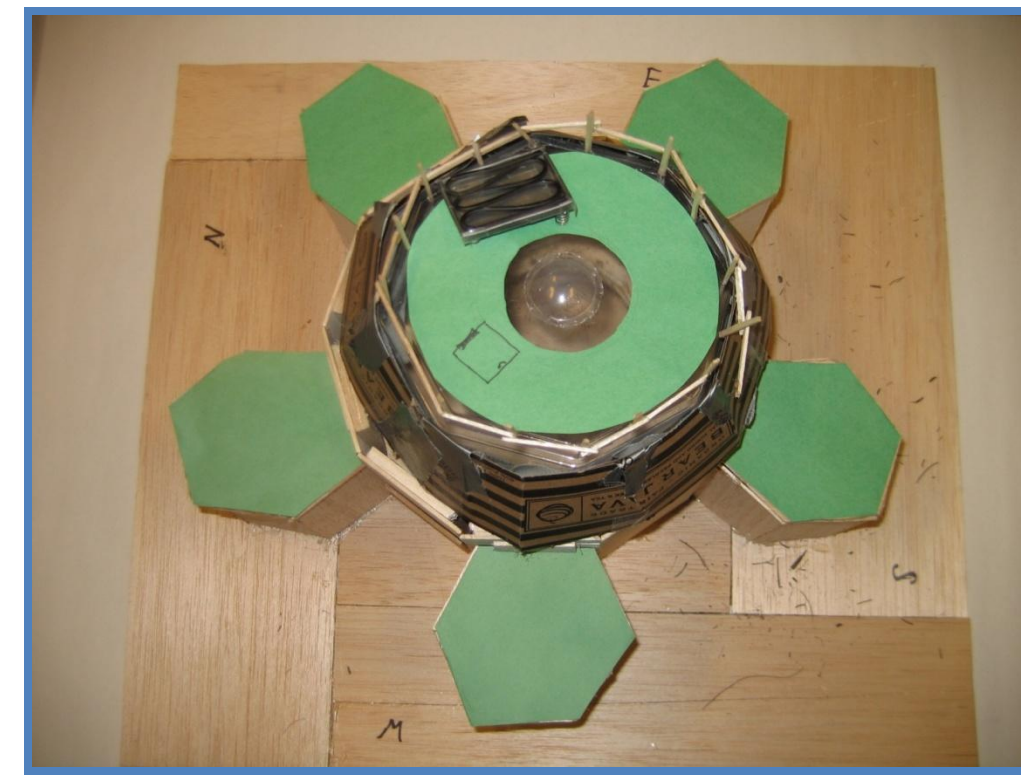


Fig. 2: Top Down View

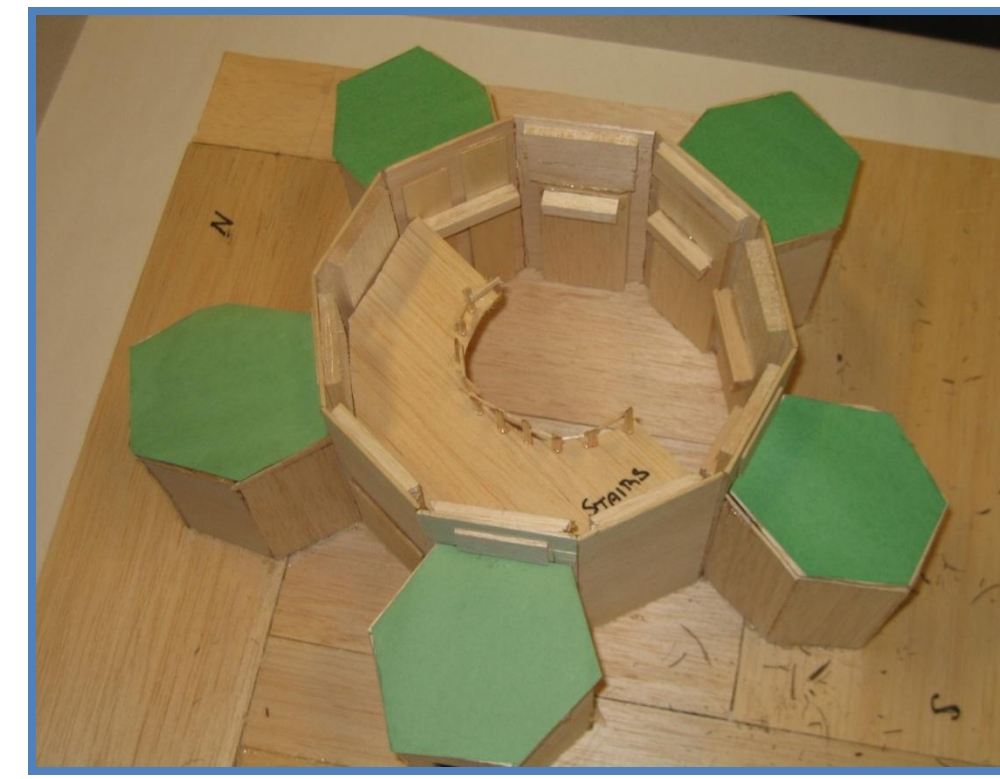


Fig. 3: Roof Removed



Fig. 8: Roundhouse Style Design Side View



Fig. 4: Members of PPN



Fig. 5: HUD-financed housing



Fig. 6: Group Discussions on Needs



Fig. 7: Group Discussions on Concepts

Human Centered Design Approach

An innovation workshop was held to identify PPN and brainstorm concepts. The basis for human centered design is that the end users are experts on their needs. Co-designing with end users can lead to better solutions and which are readily adopted.

Innovation workshop results

The top needs from innovation workshop are:

- Privacy • Exercise • Energy Conservation
- Storage • Safety Comfort • Lower Energy Costs
- Learn and Use Traditional Techniques • Space

Impact

The design honors the 4 traditional directions (N,S W,E) as well as down/earth and up/sky. The PPN can use the design for centralized housing and office buildings and for federal funding to build culturally inspired, sustainable homes and buildings.

The design process has empowered the PPN to make informed decisions about various renewable energy options and initiated discussion within the PPN about other ways to implement sustainability best practices in the community.

Future Research

- Refine initial roundhouse style design to incorporate grey water, PV, and solar hot water systems and a green roof structure
- Create energy retrofit options for Pinoleville Subdivision in Lakeport, CA
- Engage PPN with engineering and architecture students in spring design classes
- Develop strategic energy action plan with PPN
- From more information:
<http://www.appropedia.org/CARES>